

ABSTRACT OF THE DISCLOSURE

The invention provides a vaccine composition and a method of preparation including the steps of: forming a water-in-oil emulsion including an alginate in water, an oil, an antigen, and either (a) a cellulose ether and at least one nonionic surfactant or (b) a PEO-PPO-PEO triblock copolymer surfactant and at least one nonionic surfactant; followed by crosslinking the alginate in the emulsion with at least two cations selected from the group consisting of aluminum, barium, calcium, lithium, manganese, strontium, and zinc, to form antigen-containing, crosslinked alginate microparticles; and harvesting the microparticles. Another aspect of the invention is a method of vaccinating a vertebrate species including the step of administering to the species a vaccine composition prepared according to the method of the invention. The compositions of the invention have improved antigen loading, reduced microparticle size, increased hydrophobicity, improved uptake by antigen sampling cells, controlled antigen release characteristics, and improved immunogenicity.